

FAA Alaskan Flyer

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Aviation Information for Alaskans/ A Flight Standards Publication

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Wake Turbulence – Where Do I Go?

Recently, a Piper Navajo received severe structural damage after encountering wake turbulence having passed behind an MD-11 which was on approach to Anchorage. The following is a short refresher on wake turbulence and its avoidance.

Every aircraft in flight generates a wake. This disturbance is caused by a pair of counter rotating vortices trailing from the wing tips. Those from large aircraft pose problems as they can impose rolling moments exceeding the roll control capability of some aircraft. Turbulence generated within the vortices can damage aircraft components and equipment and cause personal injuries. Pilots must learn to envision the location of the vortex wake generated and adjust his/her flight path accordingly. The region within about 100 feet of the vortex core should be avoided.

The strength of the vortex is governed by the weight, speed, and shape of the wing. The vortex characteristics can be changed by extension of flaps or other wing configuring devices, but the basic factor is weight. The greatest vortex strength occurs when the aircraft is heavy clean slow and speeds up to almost 300 feet per second have been recorded.

The wake of larger aircraft requires the respect of all pilots.

Vortex Behavior:

Trailing vortices have certain behavioral characteristics that can help a pilot visualize the location of the wake and thereby take avoidance precautions.

- a. Vortices are generated from the moment aircraft leave the ground, since they are a by-product of wing lift. Prior to takeoff or landing, pilots should note the rotation or touchdown point of the preceding aircraft.
- b. The circulation is outward, upward and around the wing tips. Tests with large aircraft show that the vortices remain spaced a bit less than a wing span apart drifting with the wind, at altitudes greater than a wingspan from the ground. A slight change of altitude and lateral position (preferably **upwind**) will provide a flight path clear of the turbulence.
- c. Vortices from larger aircraft sink at a rate of several hundred feet per minute, slowing their descent and diminishing in strength with time and distance behind the aircraft. Atmospheric turbulence hastens breakup. Pilots should fly **at or above** the preceding aircraft's flightpath.
- d. When the vortices sink close to the ground within (100 to 200 feet), they tend to move laterally over the ground at a speed of 2 or 3 knots.

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e. A crosswind will decrease the lateral movement of the upwind vortex and increase the movement of the downwind vortex. Therefore, a light wind with a cross-runway component of 1 to 5 knots may result in the upwind vortex remaining in the touchdown zone and hasten the drift of the downwind vortex toward another runway. Similarly, a tailwind condition can move the vortices of the preceding aircraft forward into the touchdown zone. **The light quartering tailwind requires maximum caution.** Pilots should be alert to large aircraft upwind from their approach and takeoff flightpaths.

Pilots should be particularly alert in calm wind conditions and situations where the vortices could:

- a. Remain in the touchdown area.
- b. Drift from aircraft operating on a nearby runway.
- c. Sink into takeoff or landing path from a crossing runway.
- d. Sink into the traffic patterns from other airport operations.
- e. Sink into the flight path of VFR flights operating below.

Visualize the Location of the Vortex

Air Traffic Controllers provide the position, altitude and direction of flight of larger aircraft followed by the phrase “caution - wake turbulence” to VFR aircraft with whom they are in communication and which in the tower’s opinion may be adversely affected by wake turbulence from a larger aircraft.

Whether or not a warning has been given, the pilot is expected to adjust his/her operations and flight path to avoid serious wake encounters. It is the pilot’s responsibility to take whatever action to avoid vortex problems.

Acceptance of a visual approach

clearance from ATC or traffic information is an acknowledgement that the pilot will ensure safe take off and landing intervals and accepts the responsibility for wake turbulence avoidance separation.

ATC is required to use at least a two minute separation interval unless the pilot requests to deviate from that interval.

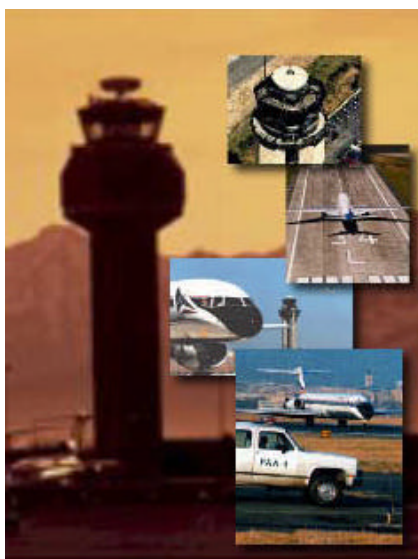
Remember:

1. Lift off short of a large aircraft rotation point.
2. Land well beyond the touchdown point.
3. Pass **over** or at least 1000ft under the flightpath of a large aircraft.
4. Stay to the windward side of large aircraft flightpaths.
Keep alert on calm days. Vortices hang around longer.

This information is extracted from the AC 90-23E. Contact your Safety Program Manager at your local FSDO for more information.

Pt McKenzie—The Tower

The construction of the KFQD radio transmitter tower at Pt. McKenzie has now been completed and should be operational by the end of November on 750 MHZ. The tower is 497 feet MSL (360 feet AGL). It will be lit through daylight hours by medium intensity strobes and by flashing red lights at night. For those with GPS, the coordinates are 61. 20. 17.01 N, 150. 02. 11.0 W.



Runway Incursions - Why the Emphasis?

A recent study done at MIT for the FAA indicates that within the next ten to twenty years there will be an estimated 15 fatal accidents due to runway incursions, three of which will be jet to jet. The study also indicated there will be 700-800 fatalities and 200 serious injuries involved with those accidents. This is a mid range estimate. At this time 80% of the incursions involve GA aircraft and occur usually at times of restricted visibility due to darkness, weather or some other limiting factor. This administration recognizes that to prevent these statistics from becoming a reality, steps need to be taken now. Identifying a problem is half way to solving it. This is a winnable situation.

As pilots, we all have a responsibility to do our part within the system. Our certificates allow us to fly almost anywhere in the country, and whether or not we fly to towered airports or not, we should all be familiar and know what the signage on airports means, be able to communicate clearly and concisely our intentions and follow the rules designed to make this the safest aviation system in the world.

Remember, if in doubt, ASK!

Congratulations to Dean Eichholtz

Dean received an FAA Alaskan Region High Flyer award for his services to aviation. He has contributed so much to improving safety in aviation throughout the region, especially in his home district, the Kenai Peninsula.

NOTAM Reminder

NOTAM's should always be checked for your destination and alternate airport before departure. The runway or other conditions may have changed which would effect the safety of your flight. If the Flight Service Station (FSS) person or other briefer does not give you NOTAM's, ask for them. There are two primary classifications of NOTAM's, NOTAM "D" (distant) and NOTAM "L" (local). Complete explanations of these are in the Aeronautical Information Manual (AIM) under Notices to Airmen.

There are two other NOTAM classifications used here in Alaska under a Letter Of Agreement between the State of Alaska DOTPF and the Federal Aviation Administration FSS Managers. The first is "O", Other Information. This identifies aviation information from any source that does not meet basic NOTAM criteria. "O" reports indicate a possible hazard to aviation and are generally limited to aircraft movement areas and services. An example would be non-availability of fuel. The second is "U", Unofficial Aeronautical Information addressing landing area information received that meets NOTAM criteria and has not been confirmed by the responsible Airport Manager or their designee.

The information contained in an "O" or "U" NOTAM is retained for the valid period of the NOTAM. Always ask for NOTAM's. NOTAM information could have a very important effect on your flight and is available to you.



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Federal Aviation Administration

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Official Business
Penalty for Private Use \$300

AC Form 1360-165 (3/96)

**UPCOMING
SAFETY SEMINARS 2001**

Fairbanks FSDO District

NTSB (Tentative) March 15
IA Renewal March 16

Anchorage FSDO District

Spring Seminar March 10
Dillingham April 3
King Salmon April 4
Seaplane Seminar April 21

Juneau FSDO District

Please contact the Juneau FSDO
for the monthly meeting schedule.

Please check with your local FSDO office
through the "800" toll free number for
specific times and locations. The numbers
are listed on page 1.



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